

## WHAT IS CLAIMED IS:

1           1.    For use in a wireless network communications system  
2 comprising at least one base station and at least one mobile  
3 station, an apparatus for increasing a data transmission rate in a  
4 mobile wireless communication channel, said apparatus comprising:

5               a base station that is capable of sending data packets to  
6 a mobile station on a supplemental channel at a first data rate,  
and capable of receiving a negative acknowledgment signal from said  
mobile station that said mobile station failed to correctly receive  
at least one data packet, and capable of sending at least one  
replacement data packet to said mobile station on said supplemental  
channel at a second higher data rate; and

7               a mobile station comprising a replacement data packet  
8 controller capable of receiving said at least one replacement data  
9 packet from said base station and incorporating said at least one  
10 replacement data packet into a data packet stream to replace one  
11 of: a missing data packet and an error data packet.  
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1           2.    The apparatus as set forth in Claim 1 wherein said mobile  
2 station is further capable of sending an acknowledgment signal to  
3 said base station that said mobile station has received said at  
4 least one replacement data packet from said base station and  
5 wherein in response to receiving said acknowledgment signal said  
6 base station is further capable of ceasing sending said at least  
7 one replacement data packet on said supplemental channel at said  
8 second higher data rate, and is further capable of sending data  
9 packets to said mobile station on said supplemental channel at said  
10 first data rate.

1           3.    The apparatus as set forth in Claim 1 wherein said  
2 replacement data packet controller of said mobile station  
3 comprises:

4           a main controller;

5           a replacement data packet acquisition application executable  
6 by said main controller, said replacement data packet acquisition  
7 application capable of acquiring at least one replacement data  
8 packet from said base station; and

9           a replacement data packet integration application executable  
10 by said main controller, said replacement data packet integration  
11 application capable of integrating said at least one replacement  
12 data packet from said base station into a data packet stream to  
13 replace one of: a missing data packet and an error data packet.

14           4.    The apparatus as set forth in Claim 2 wherein said first  
15 data rate on said supplemental channel is seventy two kilobits per  
16 second and wherein said second higher data rate on said  
17 supplemental channel is greater than seventy two kilobits per  
18 second.

1           5. For use in a wireless network communications system  
2 comprising at least one base station and at least one mobile  
3 station, an apparatus for increasing a data transmission rate in a  
4 mobile wireless communication channel, said apparatus comprising:

5           a base station that is capable of sending data packets to  
6 a mobile station on a fundamental channel at a first data rate, and  
7 capable of receiving a negative acknowledgment signal from said  
8 mobile station that said mobile station failed to correctly receive  
9 at least one data packet, and capable of sending at least one  
10 replacement data packet to said mobile station on a supplemental  
11 channel at a second higher data rate; and

12           a mobile station comprising a replacement data packet  
13 controller capable of receiving said at least one replacement data  
14 packet from said base station and incorporating said at least one  
15 replacement data packet into a data packet stream to replace one  
16 of: a missing data packet and an error data packet.

1           6.    The apparatus as set forth in Claim 5 wherein said mobile  
2 station is further capable of sending an acknowledgment signal to  
3 said base station that said mobile station has received said at  
4 least one replacement data packet from said base station and  
5 wherein in response to receiving said acknowledgment signal said  
6 base station is further capable of ceasing sending said at least  
7 one replacement data packet on said supplemental channel at said  
8 second higher data rate, and is further capable of sending data  
packets to said mobile station on said fundamental channel at said  
first data rate.

1           7. The apparatus as set forth in Claim 5 wherein said  
2 replacement data packet controller of said mobile station  
3 comprises:

4           a main controller;

5           a replacement data packet acquisition application executable  
6 by said main controller, said replacement data packet acquisition  
7 application capable of acquiring at least one replacement data  
8 packet from said base station; and

9           a replacement data packet integration application executable  
10 by said main controller, said replacement data packet integration  
11 application capable of integrating said at least one replacement  
12 data packet from said base station into a data packet stream to  
13 replace one of: a missing data packet and an error data packet.

14           8. The apparatus as set forth in Claim 6 wherein said first  
15 data rate on said fundamental channel is fourteen and one tenths  
16 kilobits per second and wherein said second higher data rate on  
17 said supplemental channel is greater than fourteen and one tenths  
18 kilobits per second.

1           9. For use in a wireless network communications system  
2 comprising a plurality of base stations and at least one mobile  
3 station, an apparatus for increasing a data transmission rate in a  
4 mobile wireless communication channel when a first base station is  
5 handing off to a second base station a transmission of data packets  
6 for a mobile station, said apparatus comprising:

7           a first base station that is capable of sending data  
8 packets to a second base station on a supplemental channel at a  
9 first data rate;

10           wherein second base station is capable of sending said  
11 data packets to said mobile station on said supplemental channel at  
12 said first data rate;

13           wherein said first base station is capable of receiving a  
14 negative acknowledgment signal from said mobile station that said  
15 mobile station failed to correctly receive at least one data packet  
16 from said second base station;

17           wherein said first base station is capable of sending an  
18 A3 physical transition directive message to said second base  
19 station to cause said second base station to increase a bandwidth  
20 of said supplemental channel to said mobile station;

21 wherein said first base station and said second base  
22 station are capable of sending at least one replacement data packet  
23 to said mobile station on said increased bandwidth supplemental  
24 channel at a second higher data rate; and

25 wherein said mobile station comprises a replacement data  
26 packet controller capable of receiving said at least one  
27 replacement data packet and incorporating said at least one  
28 replacement data packet into a data packet stream to replace one  
29 of: a missing data packet and an error data packet.



1           10. The apparatus as set forth in Claim 9 wherein said mobile  
2 station is further capable of sending an acknowledgment signal to  
3 said first base station that said mobile station has received said  
4 at least one replacement data packet;

5           wherein in response to receiving said acknowledgment  
6 signal from said mobile station said first base station is further  
7 capable of sending an A3 physical transition directive message to  
8 said second base station to cause said second base station to  
9 decrease said bandwidth of said supplemental channel to said mobile  
10 station;

11           wherein said first base station and said second base  
12 station are further capable of ceasing to send said at least one  
13 replacement data packet on said supplemental channel at said second  
14 higher data rate; and

15           wherein said first base station and said second base  
16 station are further capable of sending data packets to said mobile  
17 station on said supplemental channel at said first data rate.

1 11. The apparatus as set forth in Claim 9 wherein said  
2 replacement data packet controller of said mobile station  
3 comprises:

4 a main controller;

5 a replacement data packet acquisition application executable  
6 by said main controller, said replacement data packet acquisition  
7 application capable of acquiring at least one replacement data  
8 packet from a base station; and

9 a replacement data packet integration application executable  
10 by said main controller, said replacement data packet integration  
11 application capable of integrating said at least one replacement  
12 data packet from said base station into a data packet stream to  
13 replace one of: a missing data packet and an error data packet.

1        12. The apparatus as set forth in Claim 9 wherein said first  
2 base station is capable of sending an IS-2000 message to said  
3 second base station to cause said second base station to activate a  
4 second supplemental channel to said mobile station; and

5                wherein said first base station and said second base  
6 station are capable of sending at least one replacement data packet  
7 to said mobile station on said second supplemental channel at a  
8 second higher data rate.

12. The apparatus as set forth in Claim 9 wherein said first base station is capable of sending an IS-2000 message to said second base station to cause said second base station to activate a second supplemental channel to said mobile station; and wherein said first base station and said second base station are capable of sending at least one replacement data packet to said mobile station on said second supplemental channel at a second higher data rate.

1        13. The apparatus as set forth in Claim 12 wherein said  
2 mobile station is further capable of sending an acknowledgment  
3 signal to said first base station that said mobile station has  
4 received said at least one replacement data packet;

5                wherein in response to receiving said acknowledgment  
6 signal from said mobile station said first base station is further  
7 capable of sending an IS-2000 message to said second base station  
8 to cause said second base station to deactivate said second  
9 supplemental channel to said mobile station;

10               wherein said first base station and said second base  
11 station are further capable of ceasing to send said at least one  
12 replacement data packet on said second supplemental channel at said  
13 second higher data rate; and

14               wherein said first base station and said second base  
15 station are further capable of sending data packets to said mobile  
16 station on a supplemental channel at said first data rate.

1        14. The apparatus as set forth in Claim 13 wherein said A3  
2 physical transition directive message contains information  
3 comprising one of: an element identifier, a length, a data rate,  
4 and an action time.

1        15. The apparatus as set forth in Claim 10 wherein said first  
2 data rate on said supplemental channel is seventy two kilobits per  
3 second and wherein said second higher data rate on said increased  
4 bandwidth supplemental channel is greater than seventy two kilobits  
5 per second.

1        16. For use in a wireless network communications system  
2 comprising a plurality of base stations and at least one mobile  
3 station, an apparatus for increasing a data transmission rate in a  
4 mobile wireless communication channel when a first base station is  
5 handing off to a second base station a transmission of data packets  
6 for a mobile station, said apparatus comprising:

7            a first base station that is capable of sending data  
8 packets to a second base station on a fundamental channel at a  
9 first data rate;

10           wherein second base station is capable of sending said  
11 data packets to said mobile station on said fundamental channel at  
12 said first data rate;

13           wherein said first base station is capable of receiving a  
14 negative acknowledgment signal from said mobile station that said  
15 mobile station failed to correctly receive at least one data packet  
16 from said second base station;

17           wherein said first base station is capable of sending an  
18 IS-2000 message to said second base station to cause said second  
19 base station to activate a supplemental channel to said mobile  
20 station;

21 wherein said first base station and said second base  
22 station are capable of sending at least one replacement data packet  
23 to said mobile station on said supplemental channel at a second  
24 higher data rate; and

25 wherein said mobile station comprises a replacement data  
26 packet controller capable of receiving said at least one  
27 replacement data packet and incorporating said at least one  
28 replacement data packet into a data packet stream to replace one  
29 of: a missing data packet and an error data packet.

1        17. The apparatus as set forth in Claim 16 wherein said  
2 mobile station is further capable of sending an acknowledgment  
3 signal to said first base station that said mobile station has  
4 received said at least one replacement data packet;

5                wherein in response to receiving said acknowledgment  
6 signal from said mobile station said first base station is further  
7 capable of sending an IS-2000 message to said second base station  
8 to cause said second base station to deactivate said supplemental  
9 channel to said mobile station;

10               wherein said first base station and said second base  
11 station are further capable of ceasing to send said at least one  
12 replacement data packet on said supplemental channel at said second  
13 higher data rate; and

14               wherein said first base station and said second base  
15 station are further capable of sending data packets to said mobile  
16 station on said fundamental channel at said first data rate.

1        18. The apparatus as set forth in Claim 17 wherein said first  
2 data rate on said fundamental channel is fourteen and one tenths  
3 kilobits per second and wherein said second higher data rate on  
4 said supplemental channel is greater than fourteen and one tenths  
5 kilobits per second.



1        19. For use in a wireless network communications system  
2 comprising at least one base station and at least one mobile  
3 station, a method for increasing a data transmission rate in a  
4 mobile wireless communication channel, said method comprising the  
5 steps of:

6            sending data packets from a base station to a mobile  
7 station on a supplemental channel at a first data rate;

8            receiving in said base station a negative acknowledgment  
9 signal from said mobile station that said mobile station failed to  
10 correctly receive at least one data packet;

11           sending at least one replacement data packet from said  
12 base station to said mobile station on said supplemental channel at  
13 a second higher data rate;

14           receiving said at least one replacement data packet from  
15 said base station in a replacement data packet controller of said  
16 mobile station; and

17           incorporating said at least one replacement data packet  
18 into a data packet stream within said mobile station to replace one  
19 of: a missing data packet and an error data packet.

1           20. The method as set forth in Claim 19 further comprising  
2 the steps of:

3               sending an acknowledgment signal from said mobile station  
4 to said base station that said mobile station has received said at  
5 least one replacement data packet from said base station;

6               in response to receiving said acknowledgment signal,  
7 ceasing to send from said base station said at least one  
8 replacement data packet on said supplemental channel at said second  
9 higher data rate; and

10              sending data packets from said base station to said  
11 mobile station on said supplemental channel at said first data  
12 rate.

1           21. The method as set forth in Claim 19 wherein said  
2 replacement data packet controller of said mobile station  
3 comprises:

4           a main controller;  
5           a replacement data packet acquisition application executable  
6 by said main controller, said replacement data packet acquisition  
7 application capable of acquiring at least one replacement data  
8 packet from said base station; and

9           a replacement data packet integration application executable  
10 by said main controller, said replacement data packet integration  
11 application capable of integrating said at least one replacement  
12 data packet from said base station into a data packet stream to  
13 replace one of: a missing data packet and an error data packet.

14           22. The method as set forth in Claim 20 wherein said first  
15 data rate on said supplemental channel is seventy two kilobits per  
16 second and wherein said second higher data rate on said  
17 supplemental channel is greater than seventy two kilobits per  
18 second.

1        23. For use in a wireless network communications system  
2 comprising at least one base station and at least one mobile  
3 station, a method for increasing a data transmission rate in a  
4 mobile wireless communication channel, said method comprising the  
5 steps of:

6            sending data packets from a base station to a mobile  
7 station on a fundamental channel at a first data rate;

8            receiving in said base station a negative acknowledgment  
9 signal from said mobile station that said mobile station failed to  
10 correctly receive at least one data packet;

11           sending at least one replacement data packet from said  
12 base station to said mobile station on a supplemental channel at a  
13 second higher data rate; and

14           receiving said at least one replacement data packet from  
15 said base station in a replacement data packet controller of said  
16 mobile station; and

17           incorporating said at least one replacement data packet  
18 into a data packet stream within said mobile station to replace one  
19 of: a missing data packet and an error data packet.

1           24. The method as set forth in Claim 23 further comprising  
2 the steps of:

3           sending an acknowledgment signal from said mobile station  
4 to said base station that said mobile station has received said at  
5 least one replacement data packet from said base station;

6           in response to receiving said acknowledgment signal,  
7 ceasing to send from said base station said at least one  
8 replacement data packet on said supplemental channel at said second  
9 higher data rate; and

10           sending data packets from said base station to said  
11 mobile station on said fundamental channel at said first data rate.

1        25. The method as set forth in Claim 23 wherein said  
2 replacement data packet controller of said mobile station  
3 comprises:

4        a main controller;

5        a replacement data packet acquisition application executable  
6 by said main controller, said replacement data packet acquisition  
7 application capable of acquiring at least one replacement data  
8 packet from said base station; and

9        a replacement data packet integration application executable  
10 by said main controller, said replacement data packet integration  
11 application capable of integrating said at least one replacement  
12 data packet from said base station into a data packet stream to  
13 replace one of: a missing data packet and an error data packet.

14       26. The method as set forth in Claim 24 wherein said first  
15 data rate on said fundamental channel is fourteen and one tenths  
16 kilobits per second and wherein said second higher data rate on  
17 said supplemental channel is greater than fourteen and one tenths  
18 kilobits per second.

1           27. For use in a wireless network communications system  
2 comprising a plurality of base stations and at least one mobile  
3 station, a method for increasing a data transmission rate in a  
4 mobile wireless communication channel when a first base station is  
5 handing off to a second base station a transmission of data packets  
6 for a mobile station, said method comprising the steps of:

7           sending data packets from a first base station to a  
8 second base station on a supplemental channel at a first data rate;

9           sending said data packets from said second base station  
10 to said mobile station on said supplemental channel at said first  
11 data rate;

12           receiving in said first base station a negative  
13 acknowledgment signal from said mobile station that said mobile  
14 station failed to correctly receive at least one data packet from  
15 said second base station;

16           sending an A3 physical transition directive message from  
17 said first base station to said second base station to cause said  
18 second base station to increase a bandwidth of said supplemental  
19 channel to said mobile station;

20            sending at least one replacement data packet from said  
21 first base station and said second base station to said mobile  
22 station on said increased bandwidth supplemental channel at a  
23 second higher data rate;

24            receiving said at least one replacement data packet in a  
25 replacement data packet controller of said mobile station; and

26            incorporating said at least one replacement data packet  
27 into a data packet stream within said mobile station to replace one  
28 of: a missing data packet and an error data packet.



1        28. The method as set forth in Claim 27 further comprising  
2 the steps of:

3            sending an acknowledgment signal from said mobile station  
4 to said first base station that said mobile station has received  
5 said at least one replacement data packet;

6            in response to receiving said acknowledgment signal from  
7 said mobile station, sending an A3 physical transition directive  
8 message from said first base station to said second base station to  
9 cause said second base station to decrease said bandwidth of said  
10 supplemental channel to said mobile station;

11            ceasing to send from said first base station and said  
12 second base station said at least one replacement data packet on  
13 said supplemental channel at said second higher data rate; and

14            sending data packets from said first base station and  
15 said second base station to said mobile station on said  
16 supplemental channel at said first data rate.

1           29. The method as set forth in Claim 27 wherein said  
2 replacement data packet controller of said mobile station  
3 comprises:

4           a main controller;

5           a replacement data packet acquisition application executable  
6 by said main controller, said replacement data packet acquisition  
7 application capable of acquiring at least one replacement data  
8 packet from a base station; and

9           a replacement data packet integration application executable  
10 by said main controller, said replacement data packet integration  
11 application capable of integrating said at least one replacement  
12 data packet from said base station into a data packet stream to  
13 replace one of: a missing data packet and an error data packet.

14           30. The method as set forth in Claim 27 further comprising  
15 the steps of:

16           sending an IS-2000 message from said first base station  
17 to said second base station to cause said second base station to  
18 activate a second supplemental channel to said mobile station; and

19           sending at least one replacement data packet from said  
20 first base station and said second base station to said mobile  
21 station on said second supplemental channel at a second higher data  
22 rate.

1        31. The method as set forth in Claim 30 further comprising  
2 the steps of:

3            sending an acknowledgment signal from said mobile station  
4 to said first base station that said mobile station has received  
5 said at least one replacement data packet;

6            in response to receiving said acknowledgment signal from  
7 said mobile station, sending an IS-2000 message from said first  
8 base station to said second base station to cause said second base  
9 station to deactivate said second supplemental channel to said  
10 mobile station;

11            ceasing to send said at least one replacement data packet  
12 from said first base station and said second base station on said  
13 second supplemental channel at said second higher data rate; and

14            sending data packets from said first base station and  
15 said second base station to said mobile station on a supplemental  
16 channel at said first data rate.

1        32. The method as set forth in Claim 31 wherein said A3  
2 physical transition directive message contains information  
3 comprising one of: an element identifier, a length, a data rate,  
4 and an action time.

1           33. The method as set forth in Claim 28 wherein said first  
2 data rate on said supplemental channel is seventy two kilobits per  
3 second and wherein said second higher data rate on said increased  
4 bandwidth supplemental channel is greater than seventy two kilobits  
5 per second.

1           34. For use in a wireless network communications system  
2 comprising a plurality of base stations and at least one mobile  
3 station, a method for increasing a data transmission rate in a  
4 mobile wireless communication channel when a first base station is  
5 handing off to a second base station a transmission of data packets  
6 for a mobile station, said method comprising the steps of:

7           sending data packets from a first base station to a  
8 second base station on a fundamental channel at a first data rate;

9           sending said data packets from said second base station  
10 to said mobile station on said fundamental channel at said first  
11 data rate;

12           receiving in said first base station a negative  
13 acknowledgment signal from said mobile station that said mobile  
14 station failed to correctly receive at least one data packet from  
15 said second base station;

16           sending an IS-2000 message from said first base station  
17 to said second base station to cause said second base station to  
18 activate a supplemental channel to said mobile station;

19           sending at least one replacement data packet from said  
20 first base station and said second base station to said mobile  
21 station on said supplemental channel at a second higher data rate;  
22 and

23 receiving said at least one replacement data packet in a  
24 replacement data packet controller of said mobile station; and  
25 incorporating said at least one replacement data packet  
26 into a data packet stream within said mobile station to replace one  
27 of: a missing data packet and an error data packet.

1 35. The method as set forth in Claim 34 further comprising  
2 the steps of:

3 sending an acknowledgment signal from said mobile station  
4 to said first base station that said mobile station has received  
5 said at least one replacement data packet;

6 in response to receiving said acknowledgment signal from  
7 said mobile station, sending an IS-2000 message from said first  
8 base station to said second base station to cause said second base  
9 station to deactivate said supplemental channel to said mobile  
10 station;

11 ceasing to send from said first base station and said  
12 second base station said at least one replacement data packet on  
13 said supplemental channel at said second higher data rate; and

14 sending data packets from said first base station and  
15 said second base station to said mobile station on said fundamental  
16 channel at said first data rate.

1           36. The method as set forth in Claim 35 wherein said first  
2 data rate on said fundamental channel is fourteen and one tenths  
3 kilobits per second and wherein said second higher data rate on  
4 said supplemental channel is greater than fourteen and one tenths  
5 kilobits per second.